



The City and the Natural Environment

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While cities and their metropolitan areas interact with and shape the natural environment, it is only recently, as Martin Melosi and Christine Rosen have observed, that historians have begun to systematically consider this relationship. Geographers and urban designers such as Ian Douglas, Spencer W. Havlick, and Ann Spirin, however, had previously laid foundations for this work. Just as urban history developed as a field in reaction to a growing societal focus on and awareness of urban problems, so has urban environmental studies grown with the evolution of the environmental movement. During our own time, as Ian McHarg was one of the first to demonstrate, the tension between natural and urbanized areas has increased, as the spread of metropolitan populations and urban land uses has reshaped and destroyed natural landscapes and environments. The relationship between the city and the natural environment has actually been circular, with cities having massive effects on the natural environment, while the natural environment, in turn, has profoundly shaped urban configurations.

Americans founded cities in locations where nature offered various attractions, such as on coastlines where the land's contours created harbors, on rivers and lakes that could be used for transportation, water supplies, and waste disposal, and in fertile river valleys with extensive food and animal resources. Rather than being passive, the natural environment frequently played an active and even destructive role in the life of cities. Urban history is filled with stories about how city dwellers contended with the forces of nature that threatened their lives, their built environments, and their urban ecosystems. Nature not only caused many of the annoyances of daily urban life, such as bad weather and pests, but it also gave rise to natural disasters and catastrophes such as floods, fires, and earthquakes. In order to protect themselves and their settlements against the forces of nature, cities

built many defenses including flood walls and dams, earthquake resistant buildings, and storage places for food and for water. At times, such protective steps sheltered urbanites against the worst natural furies, but often their own actions -- such as building on flood plains and steep slopes, under the shadow of volcanoes, or in earthquake prone zones -- exposed them, as Theodore Steinberg has recently written, to danger from natural hazards.

Cities have always placed demands on their sites and their hinterlands. In order to extend their usable territory, urban developers often reshaped natural landscapes, leveling hills, filling valleys and wetlands, and creating huge areas of made land. On this new land, they constructed a built environment of paved streets, malls, houses, factories, office buildings, and churches. In the process they altered urban biological ecosystems for their own purposes, killing off animal populations, eliminating native species of flora and fauna, and introducing new and foreign species. Thus urbanites, as Ann Spirin has written, constructed a built environment that replaced the natural environment and created a local micro-climate, with different temperature gradients and rainfall and wind patterns than those of the surrounding countryside.

City populations require food, water, fuel, and construction materials, while urban industries need natural materials for production purposes. In order to fulfill these needs, as William Cronon has brilliantly shown in *Nature's Metropolis*, urbanites increasingly had to reach far beyond their boundaries. In the nineteenth century, for instance, the demands of city dwellers for food produced rings of garden farms around cities and drove the transformation of distant prairies into cattle ranches and wheat farms; and, the many horses quartered in cities required feed, consuming the products produced by thousands of acres. In the twentieth century, as urban population increased, the demand for food drove the rise of large factory farms. The subject of the flow of food and other such commodities into 19th century cities and its subsequent marketing, however, still has to find its historian. Cities also require fresh water supplies in order to exist -- engineers, acting at the behest of urban elites and politicians, built waterworks, thrust water intake pipes ever further into neighboring lakes, dug wells deeper and deeper into the earth looking for groundwater, and dammed and diverted rivers and streams to

obtain water supplies for domestic and industrial uses and for fire-fighting. In the process of obtaining water from distant locales, cities often transformed them, making deserts where there had been fertile agricultural areas. The most dramatic story of such water theft involves Los Angeles, as graphically told by William Kahrl, Norris Hundley, jr., and others. The acquisition of protected water shed areas and the building of reservoirs often involved, as Fern Nesson has shown for Boston's Quabaug Reservoir (1928), the flooding of many towns and farms.

City entrepreneurs and industrialists were actively involved in the commodification of natural systems, putting them to use for purposes of urban consumption. The exploitation of water power from rivers and streams in New England, for instance, provided power for manufacturing cities, but, as Theodore Steinberg has argued, it also sharply altered river dynamics, destroying fish populations and depriving downstream users of adequate and unpolluted supplies. For materials to build and to heat the city, loggers stripped millions of acres of forests, quarrymen tore granite and other stone from the earth, and miners dug coal to provide fuel for commercial, industrial and domestic uses.

Urbanites had to seek locations to dispose of the wastes produced by their construction, manufacturing and consumption. They were, as I have written, seeking an "ultimate sink" for the wastes, but often ended up polluting downstream locales. Initially, they placed wastes on sites within the city, polluting the air, land, and water with industrial and domestic effluents and modifying and even destroying natural biological systems. In the post-Civil War period, as cities grew larger, they disposed of their wastes by transporting them to more distant locations.

Thus, cities constructed sewerage systems for domestic wastes to replace cesspools and privy vaults and to improve local health conditions. They usually discharged the sewage into neighboring waterways, often polluting the water supply of downstream cities. In order to avoid epidemics of waterborne disease such as typhoid and cholera, downstream cities sought new sources of supply or used technological fixes, such as water filtration (1890s) or chlorination (1912), but the choices were not simple. Industrial wastes also added to stream and lake pollution, and urban rivers often became little more than open sewers.

The air and the land also became "sinks" for waste disposal. In the late-nineteenth century, bituminous (or soft) coal became the preferred fuel for industrial, transportation, and domestic use in cities such as Chicago, Pittsburgh and St. Louis. But while providing an inexpensive and plentiful energy supply, bituminous coal was also very dirty. The cities that used it suffered from air contamination and reduced sunlight, while the cleaning tasks of householders were greatly increased. The story of smoke pollution and attempts at control has been well told by David Stradling in his recent dissertation. Industry also used land surfaces for disposal of domestic and industrial wastes, and open areas in and around cities were marked with heaps of garbage, horse manure, ashes, and industrial byproducts such as slag from iron and steel-making or copper smelting. Such materials were often used to fill-in "swamps" (wetlands) along waterfronts. Craig Colten's series of Illinois case studies provide valuable information on industrial waste disposal, as do Hugh Gorman's and Andrew Hurley's recent articles on brownfield sites.

In the late-nineteenth and early twentieth centuries, reformers began campaigning for urban environmental cleanups and public health improvements. Women's groups, as Maureen Flanagan and Suellen Hoy write, often took the lead in agitating for clean air, clean water, and improved urban "housekeeping," showing a greater concern than men with such quality of life and health-related issues. Many progressive reformers, according to the work of Paul Boyer, Stanley Schultz, and William Wilson, believed that the moral qualities of good citizenship were related to environmental improvements and to exposure to nature.

Reformers pushed for reduction of pollution and for construction of urban parks and playgrounds as a means to acculturate immigrants and upgrade workingclass citizenship as well as to provide elite playgrounds. Coalitions of enlightened businessman, reformers, and urban professionals such as engineers and public health officials spearheaded drives for improvements in water supply and sanitary services. The replacement of the horse, first by the electric trolleys and then by the automobile and motor truck, as a prime means of power for urban transport, brought about substantial improvements in street and air sanitation. Campaigns for clean air, however, as Harold Platt and Christine Rosen have written in regard to Chicago, and reduction of waterway pollution,

as I have written, were largely unsuccessful. On balance, urban sanitary conditions were probably somewhat better in the 1920s than in the late-nineteenth century, but the cost of improvement often was the exploitation of urban hinterlands for water supplies, increased downstream water pollution, and growing automobile congestion and pollution.

In the post World War II decades, as is reflected in Samuel P. Hays' comprehensive work, *Beauty, Health and Permanence: Environmental Politics in the United States, 1955-1985*, city environments suffered from heavy pollution loads as they sought to cope with increased automobile usage, pollution from industrial production, new varieties of exotic chemical pesticides and herbicides such as DDT, and the wastes of an increasingly consumer-oriented economy. Cleaner fuels and smoke control laws largely freed cities during the 1940s and 1950s of the dense smoke that they had previously suffered from. Improved urban air quality resulted largely from the substitution of natural gas and oil for coal as urban fuels and the replacement of the steam locomotive by the diesel-electric. However, great increases in automobile usage in areas such as Los Angeles and Denver produced the new phenomena of photo-chemical smog, and air pollution replaced smoke as a major concern. Another improvement that proved temporary involved the replacement of the open dump and the pig farm by the sanitary landfill as a disposal place for urban garbage in the 1950s, '60s and '70s, as discussed by Martin Melosi. By the 1970s, however, it had become clear that the sanitary landfill often had substantial polluting qualities. In addition, some metropolitan areas ran out of land for landfills, beginning an expensive search for non-polluting and environmentally sound alternatives.

During these decades, the suburban out-migration, which had begun in the nineteenth century with commuter trains and streetcars and accelerated because of the availability and convenience of the automobile, now increased to a torrent, putting major strains on the formerly rural and undeveloped metropolitan fringes. To a great extent, suburban layouts, as Adam Rome has emphasized, ignored environmental considerations, making little provision for open space, producing endless rows of resource-consuming and pesticide-and fertilizer-dependent lawns, contaminating groundwater through leaking septic tanks, and

absorbing excessive amounts of fresh water and energy. The growth of the edge or outer city since the 1970s, reflected a continued preference on the part of Americans for space-intensive single-family houses surrounded by lawns, for private automobiles over public transit, and for greenfield development. Without greater land use planning and environmental protection, urban American will, as it has in the past, continue to damage and to stress the natural environment.

The core cities themselves, especially in areas of the east and midwest where industries have vacated the regions and urban populations have decreased, suffer from the environmental burdens imposed by vacant, abandoned, and derelict sites. Many of these sites had formerly been used by industries and are contaminated, as Craig Colten, Hugh Gorman, and Andrew Hurley have discussed, with toxic wastes, which often require costly procedures to remove. Vacant lots and derelict structures in urban neighborhoods plagued by population loss and by poverty, also impose a human cost. In some of these cases, issues of environmental equity are involved. Even though today's environmental regulations prevent some of the environmental abuses of the past, without reclaiming these urban brownfields and improving urban neighborhoods many cities will continue to bear the burden of the environmental sins of the past.

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